California Public Utilities Commission

Alternative-Fueled Vehicle Rulemaking R.09-08-009

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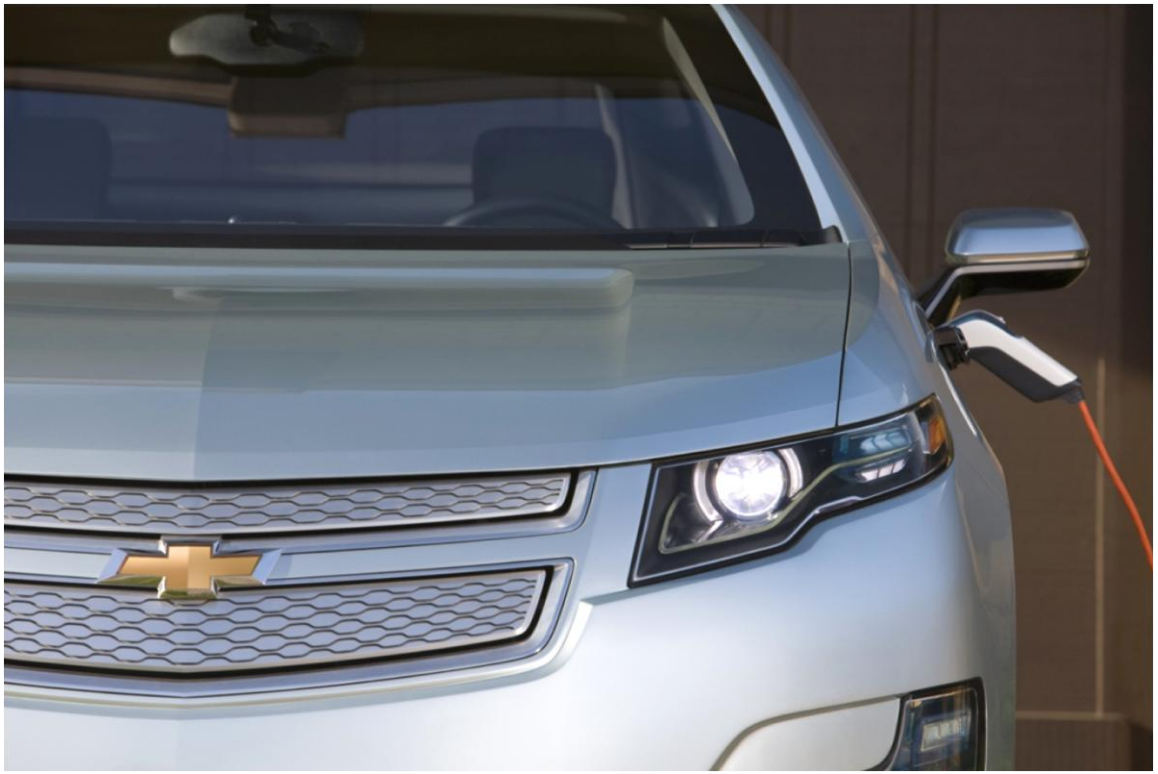
Electric Vehicle (with a Range-Extender)
Chevrolet Volt



Launching in November 2010

Up to **40** miles **BATTERY** Electric Drive

+

HUNDREDS of miles **EXTENDED RANGE** Driving (Gasoline or E85)

CPUC Alt-Fueled Vehicle Rulemaking: Q&A

- **What is the experience of today's purchaser of a plug-in vehicle?**
  - Process: Customer deals individually with dealer, contractor, and utility.
  - Equipment: Charge connectors are unique (though future equipment will be SAE J1772 compliant)
    - Limited access to public infrastructure due to incompatibility
  - Installation: Complete installation can exceed 30 days
  - Rates: Cost-Benefit analysis not easily understood
    - TOU meter installations vary across utilities and not necessarily advantageous
    - Potential added costs for meter equipment and installation

- **What entities plan to offer single-user electric vehicle charging infrastructure?**
  - GM is finalizing a plan to institute and operate a recommended national installation process
    - GM will offer a 120V cord-set with the every Chevy Volt purchase and a separate 240V EVSE charge station will also be available.
    - GM will leverage a 3rd-party relationship for installation services
    - Customer service process integrated with utilities and dealers
    - Consistent and coordinated customer experience which uses a single point-of-contact
      - Information about product options, utility rate programs, incentives,. installation requirements
      - Installation & Warranty Services

Currently, GM and its 3rd-Party provider are working directly with key utilities to develop an effective, integrated home infrastructure installation process that directly leverages and complements each utility's level of involvement for their service territory.

CPUC Alt-Fueled Vehicle Rulemaking: Q&A

- **What is the status of SAE J1772 connector for on-road vehicles and larger commercial vehicles?**
  - SAE J1772 was published in January 2010.
    - Provides requirements for AC Level 1 and Level 2 coupler interface
      - Level 1 operates up to 120V/16A and Level 2 operates up to 240V/80A
  - SAE J1772 and SAE J2847 Task Force teams are developing the interface (coupler) and charging communications standards for DC off board charging
  - SAE J1772 is also developing the interface (coupler) for DC High Power Charging (150-250Amp)

- **How will these entities ensure that standardized single-use charging equipment will be available when the customer purchases an electric vehicle?**
  - The GM-offered 120V/240V charging equipment will adhere to SAE J1772 and all applicable safety standards and certifications.
  - GM is working with multiple EVSE suppliers to test and ensure standards compliance and compatibility of their products in the event the Volt customer selects other charging hardware.

CPUC Alt-Fueled Vehicle Rulemaking: Q&A

- **What electric infrastructure-related customer service plans do automakers offers for customers prior to and at the point of purchase of an electric vehicle?**
  - Customers will be engaged at multiple points – via websites, telephone, or mailings through Chevy marketing, trained dealers, the utilities, and national websites (such as the EDTA / NPVI initiative)
  - The customer will also have the option to install Level 2 charging equipment before, during, or after the purchase of the vehicle base on preference and experience
  - GM's intends to direct customers to a customer service representatives who will provide customer-specific infrastructure information including specific charger installation guidance, applicable utility information such as EV rate programs, and available local, state and Federal incentive programs.
    - GM's certified team will work closely with each customer to explain their options, provide the most cost-effective solution, and carry-out their installation preference

Key element to success includes coordination of key stakeholders (utilities, installers, plan reviewers/inspectors, GM, etc) in providing customer education and outreach.

CPUC Alt-Fueled Vehicle Rulemaking: Q&A

- **What lessons have automakers and charging infrastructure installation companies learned about establishing single-use charging service for electric vehicles?**
  - Simplify the process for the customer by reducing multiple points of contact.
  - Confirm roles and responsibilities across all stakeholders:
    - Education and Outreach: Both general & specific, including training for inspectors and contractors
    - Installation: Closely coordinate EVSE and meter (if required) installation between utility and installer.
    - Incentives: Clear need for "rate calculators" which include TOU rates and installation costs
    - Service and Support: Defined process establishing handoffs between each party and technical support
  - Develop a fully-integrated installation
    - Qualified and trained contractor network
    - Integrated CRM tools which track each installation and service activity
    - Applied quality control and measurement process – including performance metrics
    - Customer follow-up and feedback – continuous improvement process
  - These all must be completed at an acceptable cost
    - GM believes customer tolerance of about $500-$1,000 for complete Level 2 residential installation (hardware, installation service) vs. about $1,500-$2,500 historical cost.

Near-term focus should be on a simplified residential home installation process and cost-reduction to support early market development.

CPUC Alt-Fueled Vehicle Rulemaking: Q&A

- **What solutions are available beyond single-user charging, such as charging at multi-dwelling units (MDUs)?**
  - GM believes the priority for establishing charging infrastructure is:
    - Home (i.e. single family homes)
    - Workplace
    - Multi-Dwelling Units
    - Commercial
    - Public
  - The installation process for MDUs will be more complex, requiring site-specific installation planning.
  - Provisions are needed to incentivize property owners and management associations of MDUs and single-family homes without garage access or with open access parking to install PEV charging infrastructure.
    - Specific infrastructure process guidelines should be developed and distributed
    - Utilities should initiate outreach programs directed at landlords, mngt. associations, and workplace entities
    - Consideration should be given to provide incentives, tax credits by local and State government.
    - Consideration should be given to provide subsidies and discounts by utilities
    - Additional: Establish zoning, parking, and building regulations to provide that a percentage of parking spaces be designated for resident-accessible PEV charging and
    - Additional: Establish building codes to install PEV Ready infrastructure in new construction, renovation projects.

GM believes most benefit is driven by focusing on installations at single family residences.

CPUC Alt-Fueled Vehicle Rulemaking: Recommendations

- **California can provide a positive impact on the growth of electric transportation in the following areas:**

Education and Outreach

- Utilities should provide rate calculators and customer education materials that will help consumers understand and make the right decisions related to electricity usage.
  - Materials should be transparent and easily understood to support customer decision making
- Provide consumer education and outreach for Workplace and Multi-Dwelling Units infrastructure

Installation Process

- Near-term focus should be on improving single-family home charging installation process
  - Facilitate a statewide (fast-tracking) process for permitting/inspection for home charging installation
  - Streamline and standardize the utility metering installation processes (if separate meters are required)
  - Considerations include dedicated state-wide project leader(s) and workshops

Incentives

- Offset early (higher-cost) installations for consumers
  - Bundling home infrastructure installation services, equipment, and rate discounts/incentives
  - Cost of meters and utility-specific EVSEs
- Considering and supporting infrastructure incentives, state-tax credits, subsidies, rebates, vouchers for near-term PEV customers
  - Support of additional incentives: HOV lane access, eliminate permit fees, wave vehicle sales tax